

WHAT IS CLAIMED IS:

1. A modular shoulder prosthesis for replacement of the humeral head of a humerus, comprising:
 - a stem having a distal end for insertion in the superior end of the medullary cavity of the humerus and a proximal end for engagement with a humeral head;
 - a head for positioning in a glenoid cavity, the head having, on one side, a generally spherical surface formed about an axis and, on the other side, a generally flat face bounding the spherical surface, with a bore being formed in the flat head face;
 - a connecting member for connecting the head and stem, the connecting member having a first portion and a second portion, the first portion configured for insertion into the bore of the head, the second portion being non-coaxial with and extending from the first portion; and
 - a locking piece for locking the connecting member non-rotatably within the bore.
2. The prosthesis of claim 1 wherein the bore of the humeral head is positioned non-coaxially with the axis of the spherical surface of the humeral head.
3. The prosthesis of claim 1 wherein the first portion of the connecting member is configured for rotatable insertion in the axial bore of the humeral head to enable adjustment of the second portion of the connecting member with respect to the axis of the spherical portion.
4. The prosthesis of claim 1 wherein the second portion of the connecting member is a protruding pin having a Morse taper.

5. The prosthesis of claim 1 wherein the second portion of the connecting member is configured as an element of a dove-tail slot connection.
6. The prosthesis of claim 1 wherein the bore of the humeral head and the locking member are threaded for engagement.
7. The prosthesis of claim 1 wherein the locking member is a locking ring having a bore therethrough with an inner surface and a peripheral shoulder engaging the first portion of the connecting member.
8. The prosthesis of claim 7 wherein at least one groove is provided along the inner surface of the ring for receiving a tool for adjusting the ring.
9. The prosthesis of claim 1 wherein the locking member includes a tool-engaging surface for receiving a tool for adjusting the locking member.
10. The prosthesis of claim 1 further comprising a detent formed on the first portion of the connecting member and a series of recesses formed within the axial bore of the humeral head for engaging the detent to enable the connecting member to be rotatably adjusted with respect to the humeral head into predetermined positions.
11. A method of replacing a humeral head in a patient, comprising:
- (a) inserting a stem of a prosthesis into the medullary canal of a resected humerus, the prosthesis comprising:
 - (i) the stem;
 - (ii) a head adapted to approximate the size and shape of a humeral head;
 - (iii) a connecting member for connecting the stem to the head; and

- (iv) a locking piece for securing the connecting member to the head;
- (b) engaging the connecting member with the head;
- (c) adjusting the connecting member in relationship to the head to provide a desired degree of eccentricity;
- (d) locking the connecting member to the head.